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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,355

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EXAMINER

SASTRI, SATYA B

ART UNIT

PAPER NUMBER

1796

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/577,355	Applicant(s) IKEUCHI ET AL.	
	Examiner SATYA B. SASTRI	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 18-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 18-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to communication filed on 9/9/09. Claims 1-16, 18-22 are now pending in the application, per amendment filed on 3/19/09.
2. Finality is withdrawn in view of newly found art. All previous rejections are withdrawn and new grounds of rejection are presented herein.
3. It is noted that the issue with regard to the foreign priority document JP 2003-377898 has been resolved by the office.

Previously Cited Statutes

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 1, 4-16, 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brehm et al. (US 2003/0157318 A1).

The prior art to Brehm et al. discloses absorbents for water and aqueous liquids, which absorbents are based on water swellable, yet water-insoluble polymers where in cyclodextrin or cyclodextrin derivatives and zeolites high in silicon have been incorporated ionically, covalently and/or as a result of mechanical inclusion (ab.).

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Disclosed water insoluble polymers are obtained from unsaturated acid-group-containing monomers with crosslinkers by radical polymerization (0056, 0064). Furthermore, the prior art teaches surface crosslinking the resultant polymer products in order to improve absorption properties. In this secondary crosslinking, carbon groups of the polymer molecules are crosslinked at the surface with compounds having functional groups that can react with carboxylic acid groups (0066-0068).

The amount of cyclodextrin or derivative thereof may be employed in amounts of 0.1 to 50%, more preferably 0.1 to 30% by wt. of the powdered absorbent (0053). It is noted that presently recited tetra- or more functional polyol reads on non-modified cyclodextrins as defined in the prior art (0036-0037).

Additionally, depending upon the type of use, the various screening fractions are employed for processing the polymer products, e.g. between 100 and 1,000 μm , and preferably between 150 and 850 μm for diapers. In general, this fraction is produced by milling and screening prior to and/or subsequent to secondary crosslinking (0069).

Furthermore, the Brehm et al. reference discloses a cyclodextrin component, as being added to the polymer product during its surface crosslinking at the latest (0074-0080, 0086-0088).

The prior art fails to disclose the water absorbent resin as having a particle size not less than 90% by wt. of the entirety, as presently claimed.

The prior art discloses that for diaper applications, the screened fractions, **subsequent to secondary crosslinking** (0069) preferably have a particle size between 150 and 850 μm . Thus, it would have been obvious for one of ordinary skill in the art to screen the surface crosslinked resin particles containing cyclodextrin compound so that

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the particle size ranges between 150 and 850 μm in entirety as presently claimed. Further, given the teaching that the cyclodextrin compound may be added to the water absorbent resin concurrently with the surface crosslinking process (0080), it is the examiner's position that the resultant resin must necessarily have tetra- or more functional polyol at least on surfaces.

With regard to claims 4, 5, 10-15, given that the composition as presently claimed is met by Brehm et al. reference, the water absorbent resins of the prior art must necessarily have the presently recited properties because material and their properties are inseparable.

With regard to claims 9 and 19, it is noted that cyclodextrin (cycloamylose) is an oligosaccharide, i.e. a sugar as presently recited.

With regard to claims 7, 16 and 20, it is noted that the presently recited range is encompassed by the range disclosed by Brehm et al. Thus, it would have been obvious to one skilled in the art to obtain resin particles with sizes that fall within the disclosed range, including those that fall within the scope of present invention. Further, one skilled in the art would have found it obvious to obtain particles with narrow size distribution, including those having the presently recited standard deviation so as to maintain uniformity in properties within the resin particles.

With regard to claim 8, the prior art discloses 0.1 to 50% of cyclodextrin, more preferably 0.1 to 30% by wt. of the powdered absorbent (0053).

With regard to claim 18, selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results. In re Burhans, 154 F.2d 690, 69 USPQ, 330 (CCPA 1946).

With regard to claim 21, it is the examiner's position that the prior art meets the present claim limitation, absent evidence to the contrary. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons herewith." In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

With regard to claim 22, Brehm et al. disclose a number of surface crosslinking agents (0067).

6. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brehm et al. (US 2003/0157318 A1) as evidenced by Smith et al. (US 5,314,420).

The discussion with regard to Brehm et al. above in paragraph 4 is incorporated herein reference.

The evidence reference to Smith et al., incorporated by reference in Brehm et al. disclosure, teaches a number of surface crosslinking agents, including polyvalent metal salts (col. 8, lines 33-35). Thus, the Smith et al. reference teaches art recognized functionally equivalent and interchangeable surface crosslinking agents, including polyvalent metal salts to prepare water absorbent resins of Brehm et al.

7. Claims 1-16, 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US 2004/0214946 A1) in view of Brehm et al. (US 2003/0157318 A1).

The prior art to smith et al. discloses superabsorbent polymers with high permeability. Disclosed polymers are derived on polymerizable unsaturated acid group containing monomers (0012) and internal crosslinking agents with surface crosslinking

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agent applied to particles surface and additionally, 0 to 5% by wt. of multivalent metal salt on the surface (0012, 0022, 0025, 0027, 0028, 0033, 0034). Furthermore, the superabsorbent polymers may also include water soluble polymers, such as polyvinyl alcohol and starch or starch derivatives in amounts of 0 to 30% by wt. (0037).

The prior art fails to disclose the water absorbent resin as having a particle size not less than 90% by wt. of the entirety, as presently claimed.

It is noted that the working examples in Smith et al. disclose particles having a particle ranging between 150 and 850 μm , prior to surface crosslinking reaction. Although it is not evident if the particle size changes substantially due to surface crosslinking reactions, the secondary reference to Brehm et al. teaches the desirability to screen the surface crosslinked particles, **subsequent to secondary crosslinking** (0069) to preferably have a particle size between 150 and 850 μm . Thus, it would have been obvious for one of ordinary skilled in the art to screen the surface crosslinked resin particles containing either polyvinyl alcohol or starch so that the particle size, preferably in entirety, ranges between 150 and 850 μm .

It is noted that presently recited tetra- or more polyol read on the starch and polyvinyl alcohol, disclosed as water soluble compounds by Smith et al. It is the examiner's position that the disclosed water soluble compounds would be present on the surface and the interior of the water absorbent particle, absent convincing evidence to the contrary. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons herewith." In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

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With regard to claims 4, 5, 10-15, given that the composition as presently claimed is met by Scott et al. reference, the water absorbent resins of the prior art must necessarily have the presently recited properties because material and their properties are inseparable.

With regard to claims 9 and 19, it is noted that presently recited sugar reads on starch.

With regard to claims 7, 16 and 20, it is noted that the range disclosed by Smith encompasses the presently claimed range. Thus, it would have been obvious to one skilled in the art to obtain resin particles with sizes that fall within the disclosed range, including those that fall within the scope of present invention. Further, one skilled in the art would have found it obvious to obtain particles with narrow size distribution, including those having the presently recited standard deviation so as to maintain uniformity in properties within the resin particles.

With regard to claim 8, the prior art discloses 0 to 30% by wt. of water soluble compound.

With regard to claim 18, selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results. In re Burhans, 154 F.2d 690, 69 USPQ, 330 (CCPA 1946).

With regard to claim 21, it is the examiner's position that the prior art meets the present claim limitation, absent evidence to the contrary. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons herewith." In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

8. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Wada et al. (US 6127454) in view of Brehm et al. (US 2003/0157318 A1) or Mertens et al. in view of Brehm et al. (US 2003/0157318 A1).

The discussions with regard to Wada et al. in paragraphs 4 and 5 of the office action dated 6/12/09 are incorporated herein by reference.

The prior art fails to Wada et al. or Mertens et al. fail to disclose (a) compositions comprising surface crosslinked resin and one or more tetra-functional polyol and (b) compositions comprising surface crosslinked particles of size of 850 to 150 μ accounting for not less than 90% by wt. of the entire resin particles as presently claimed.

The prior art to Wada et al. discloses a genus of surface crosslinking agents, including tetra- or more functional polyol such as pentaerythritol and sorbitol. Mertens et al. disclose 0.01-5% by wt. of at least one polyol as surface crosslinking agent and 0.001 to 1-1.0% by wt. cation containing surface crosslinking agent (col. 3, lines 30-54). Further, the disclosed polyols include pentaerythritol and sugar alcohols such as sorbitol (col. 4, lines 26-31). As such, it would have been obvious to one of ordinary skill in the art to include any of the disclosed surface crosslinking agents, including a tetra- or more polyol as presently claimed. Additionally, although the prior art does not disclose that the reaction proceeds to 100% completion and that all of the surface crosslinking agent present on the surface is consumed, given that the present claim 1 does not disclose any quantitative amount of the polyol, it is the examiner's position that even a residual amount of unreacted polyol surface crosslinking agent in Wada et al. or Merten et al. would meet the limitation of claim 1, i.e. a tetra- or more polyol at least on the surface,

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absent evidence to the fact that all of the polyol agent has chemically reacted on the surface. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons herewith.” In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

Furthermore, although neither prior art discloses the particle size of surface crosslinked resin, the secondary reference to Brehm et al. teaches the desirability to screen the surface crosslinked particles, **subsequent to secondary crosslinking** (0069) to preferably have a particle size between 150 and 850 μm . Thus, it would have been obvious for one of ordinary skill in the art to screen the surface crosslinked resin particles of Wada et al. and Mertens et al., preferably in entirety, so that the size ranges between 150 and 850 μm .

As noted above, that the lower end of the range recited in present claim 8 is sufficiently small, and thus, even trace amounts of unreacted crosslinking agent, such as sorbitol in resins of either Wada et al. or Mertens et al. would meet the limitation of claim 8, i.e. 0.01% by wt. of tetra- or more polyol at least on the surface.

Response to Arguments

9. In view of the newly found art, new grounds of rejection are presented herein. Additionally, applicant's arguments with regard to the prior art of record have been fully considered but are not found persuasive on the following grounds.

Applicant's arguments on changes in particle size as a result of surface crosslinking are deemed moot in view of the rejections.

With regard to arguments on or more "tetra- or more polyol on the surface", examiner notes that Wada et al. and Mertens et al. teach a genus of functionally equivalent and interchangeable surface crosslinking agents and one of ordinary skill in the art would have found it obvious to utilize any of the disclosed polyols, including sorbitol and pentaerythritol as surface crosslinking agents. Furthermore, with regard to applicant's arguments that the present specification demonstrates unexpected and improved properties, it is noted that the data in the specification pertains to sorbitol as the polyol. Thus, the data is clearly not reasonably commensurate in scope with the claim language, i.e. a tetra- or more polyol.

Furthermore, applicants argue that the prior art does not disclose resins having a tetra- or more polyol on the surface. Examiner contends that the present claim 1 does not recite any amount for the polyol and as such, even trace amounts of unreacted surface crosslinking agents such as sorbitol or pentaerythritol disclosed in the prior art would meet the present claim limitation- "composition contains a tetra- or more functional polyol (B) at least on surfaces". Examiner notes that to date, there has been no display of experimental evidence to show that there is no residual unreacted surface crosslinking agent on the absorbent particles of Wada et al. or Mertens et al. As such, arguments of counsel cannot take the place of evidence in the record. *In re Schulze*, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

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Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satya Sastri at (571) 272 1112. The examiner can be reached on Mondays, Thursdays and Fridays, 7AM-5.30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. David Wu can be reached on 571-272-1114.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Satya B Sastri/

Examiner, Art Unit 1796